



U2RM - Unité de recherche risques microbiens

Rapport Hcéres

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HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

HCERES report on research unit:

Unité de Recherche Risques Microbiens

U2RM

Under the supervision of
the following institutions
and research bodies:

Université de Caen Basse-Normandie - UCBN

Evaluation Campaign 2015-2016 (Group B)

HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

In the name of HCERES,¹

Michel Cosnard, president

In the name of the experts committee,²

German Bou, chairman of the committee

Under the decree No.2014-1365 dated 14 november 2014,

¹ The president of HCERES "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5)

² The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2)

Evaluation report

This report is the sole result of evaluation by the expert committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

Unit name: Unité de Recherche Risques Microbiens

Unit acronym: U2RM

Label requested: EA

Current number: EA 4655

Name of Director
(2015-2016): Mr Alain RINCÉ

Name of Project Leader
(2017-2021): Mr Axel HARTKE

Expert committee members

Chair: Mr German Bou, Hospital Universitario A Coruña, Spain

Experts: Mr Gerard BARROSO, University of Bordeaux
Ms Surbhi MALHOTRA, University of Antwerpen, Belgium

Scientific delegate representing the HCERES:
Ms Catherine SCHUSTER

Representative of supervising institutions and bodies:
Ms Anne GUESDON, University of Caen

Head of Doctoral School:
Mr François DAUPHIN, Doctoral School ED NBISE n°497, "École Doctorale Normande Biologie Intégrative, Santé, Environnement"

1 • Introduction

History and geographical location of the unit

The “Unité de Recherche Risques Microbiens”, U2RM EA4655, is part of the Fundamental and Applied Biology Institute (IBFA) located at the Campus 1 of the University of Caen Basse-Normandie. The unit results from the fusion, in January 2012, of the “Laboratoire de Microbiologie de l’Environnement” (EA956, USC INRA 2017) and the research unit “Relations Hôte et Microorganismes des Epithéliums” (EA2128).

Since 2012, the unit, headed by Mr Alain RINCÉ, is structured into three teams interested in physiology, pathology and antibiotic resistance of *Enterococci* and respiratory viruses. Team E1 “Stress Virulence” corresponds to the former EA956 and is under the scientific supervision of Mr Axel HARTKE. Team E2 “Antibio-résistance” is under the scientific supervision of Mr Vincent CATTOIR and consists of part of the former EA 2128. Team E3 “Virologie Respiratoire Comparée”, also out of the former EA 2128, is headed by Ms Astrid VABRET. For the next five-year period Team E3 will leave U2RM and join the unit GRAM 2.0 located at the University of Rouen. Teams E2 and E3 work together on the field of Equine diseases and in close contact with other members of the U2RM working in the Equine diseases research group of the GIP LABEO (Saint Contest). The U2RM teams are located at three different places: Team E1 at the campus 1 of the University of Caen, Team E2 at the site “Côte de Nacre” and Team E3 at the site “G. Clémenceau” of the Caen University Hospital. The unit is one of the partners of the research federation ICORE, giving access to high technology equipments, such as high throughput sequencing or animal facilities.

Management team

Mr Alain RINCÉ is the head of the unit. He will be replaced by his deputy head, Mr Axel HARTKE, for the coming five-year period.

HCERES nomenclature

SVE1_LS6 Immunologie, microbiologie, virologie, parasitologie.

Scientific domains

Microbiology focused on physiology, pathology and antibiotic resistance of *Enterococci* as well as virology on respiratory viruses.

Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	22	13
N2: Permanent researchers from Institutions and similar positions	8	3
N3: Other permanent staff (technicians and administrative personnel)	6	5
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)		
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	2	
N6: Other contractual staff (technicians and administrative personnel)		
N7: PhD students	11	
TOTAL N1 to N7	49	
Qualified research supervisors (HDR) or similar positions	15	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	20
Postdoctoral scientists having spent at least 12 months in the unit	4
Number of Research Supervisor Qualifications (HDR) obtained during the period	4

2 • Overall assessment of the unit

Introduction

Microbiology is the research field of the unit U2RM that includes two bacteriology teams, one interested in bacterial stress and virulence (E1) and the other in antibiotic resistance (E2) of enterococci, and a virology team (E3) specialized in equine and human respiratory viruses. The latter will join the “Groupe de Recherche sur l'Adaptation Microbienne 2.0” located in Rouen for the next contract.

The three teams are clearly visible and recognized at the national level. They have an international reputation as attested by various invitations for conferences, numerous collaborations and memberships in international consortia. The teams E2 and E3 are themselves associated with hospital “CHU” services and in charge of National Reference Centers, which contribute to their recognition and promote access to strains of Enterococci and viruses. Strategically, during this five-year period, team members developed cross-activities and shared skills between the two bacteriology teams (E1 and E2). The unit, as a member of the research federation ICORE, has access to the high throughput sequencing, CURB (animal facilities) and Proteogen (proteomic, genomic and transcriptomic) platforms required in the frame of unit's project.

Global assessment of the unit

The unit displays an intense research activity supported by numerous scientific publications, as well as invitations at national and/or international conferences, organization of international scientific events and participation in European consortia. Moreover the unit has developed numerous industrial partnerships. The unit is strongly involved in teaching at the master level and in doctoral training. The two bacteriology teams are linked through their interest in studying the physiology and pathology of *Enterococcus* spp. However, a significant number of scientific publications result from a number of lines of research that are beyond the main objectives defined within each team (i.e. most of the publications are not related to either antimicrobial resistance or virulence in *Enterococcus* spp). The committee therefore highly recommends to reconsider the objectives of this unit according to what unit members describe as really important for the unit scientific strategy. In addition, the unit should move forward its translational research, which would give more visibility. The departure of the head of team E2 and of the entire team E3 lead to the disappearance of projects directly issued from the clinical research that were the support of a large number of publications and the basis for an important part of the unit's academic reputation. This will probably force to reconsider the organization of the unit and redefine the strategic plan.

Strengths and opportunities in the context

The unit displays a high scientific productivity regarding both the quality and the quantity, and the unit director is renowned in the field. The unit has developed high performance scientific technology on site, especially the establishment of high-throughput sequencing, handling and analyzing of big data sets. The unit is involved in National Reference Centers (NRC) (Antibiotic Resistance and Respiratory Viruses) and is closely linked to the hospital giving access to clinical isolates and thus the possibility to develop clinical studies. The unit has developed partnerships with industries giving access to fee-for-service financial resources. The departure of the virology team will focus the scientific strategy of the unit on the enterococci thematic, thus giving the opportunity to the unit members to build a highly efficient team on this topic.

Weaknesses and threats in the context

Collaborations and synergies between the two bacteriology teams are not enough developed. Moreover, the unit research activity appears in some cases unfocused, as many investigators work on objectives that are non-prioritary for the unit. The research activity resulted in too little translational products such as guidelines, clinical recommendations, patents, spin-off. The time-consuming teaching load and the activities in the national reference center and the hospital of most of the scientists precludes reaching high-level science.

Two important threats have been noticed by the committee, first the dramatic lack of funding for the next five-year contract, and second, the departure of one of the bacteriology team leader and as a consequence the loss of the antibiotic resistance topic.

Recommendations

The unit should focus on better defined objectives, and try to implement them in the unit taking into consideration the skills and capabilities of teams E1 and E2. The unit should develop a strategic plan for translational research. This can be achieved in addition to the academic research plan proposed. There are possibilities and resources to reach this objective, by trying (i) to approach pharmaceutical and/or diagnostic companies for funding, not only for “fee-for-services”, (ii) to co-develop products and/or tests for the mutual benefit of the lab and the company, which will probably help to get new funds beyond standard research calls. This will depend also on the short-term development of a Translational Research Office at Caen University.

The theme “*Enterococcus hirae* and response to anti-tumor treatment” seems to have high translational potential. It is important to encourage it.

The unit should try to fit basic academic data within clinical studies in a collaborative manner. The research unit has obtained very interesting findings that were published, but not confirmed in human clinical samples.

The work package on antimicrobial resistance of team E2 will no longer be part of the new strategic plan for the next contract. Thus keeping the original unit structure based on two teams has no longer any meaning. The recommendation from the committee is to merge team E1 and team E2 into one unique team as the issues and topics are quite similar.